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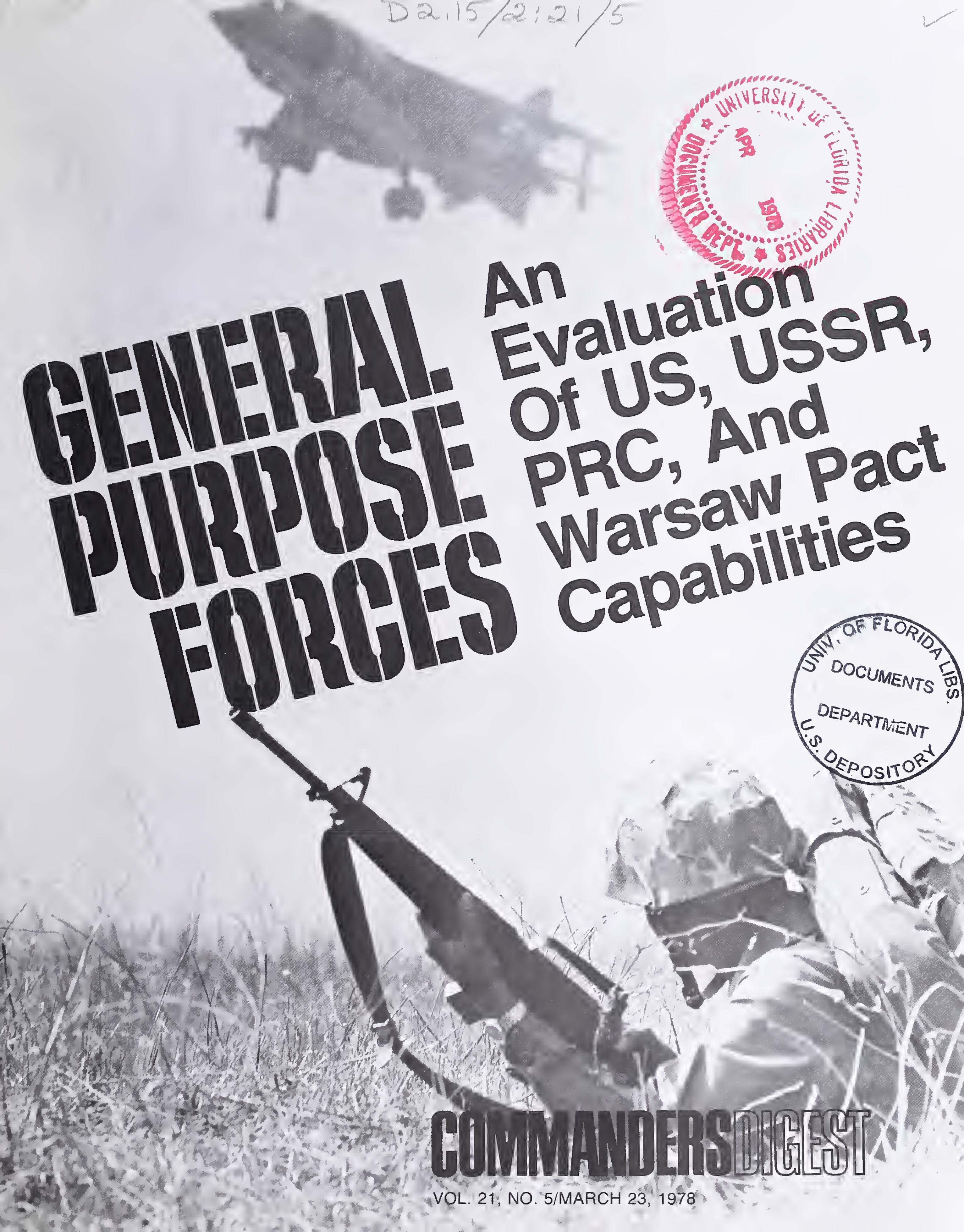

GENERAL PURPOSE FORCES

An Evaluation Of US, USSR, PRC, And Warsaw Pact Capabilities

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GENERAL PURPOSE FORCES: A BALANCE APPRAISAL

OVERVIEW

This year, as in the past few years, the Soviet Union has steadily improved its general purpose forces.

The Soviets, with their Warsaw Pact Allies, maintain a quantitative advantage over NATO in combat divisions, tanks, armored fighting vehicles, artillery, and combat aircraft, and they are modernizing these forces to close the qualitative gap which, in the past, has favored NATO. Elsewhere, Soviet forces pose a credible challenge to United States military forces and interests. Increases in their current preponderance of force will further reduce the Soviet risk in any undertaking. Such increases, together with Soviet force modernization efforts, no longer permit the United States and its allies to be comfortable with a significantly smaller force structure than theirs.

Land, sea and air forces can be assessed separately. However, major U.S. combatant forces are organized with units of various Services, employed jointly, and commanded by a single commander.

The lessons of ***REFORGER*** strategic mobility excercises, ***CRESTED CAP*** tactical air deployment exercises, and day-to-day field operations with NATO allies are providing the basis for combined operations doctrine. Security assistance efforts, forward deployment of forces, combined command and control centers, progress in standardization, rationalization, and interoperability, and programs of overseas visits and exercises have enhanced the capability for combined operations.

Ground Forces

SOVIET AND WARSAW PACT GROUND FORCES

The ground forces of the U.S.S.R. are organized into more than 170 divisions, 27 of them in Europe opposite the NATO Central Region. In addition, there are 55 non-Soviet Warsaw Pact divisions.

During the past 10 years, the U.S.S.R. has engaged in a sustained effort to build up the combat capabilities of its ground forces. The ground establishment has been transformed from a nuclear-oriented force, austere in conventional artillery and logistics, to one capable of operating in a nuclear or nonnuclear environment.

The number of main battle tanks in a motorized rifle division in 1965 totalled 190. Expansion of tank battalions and incorporation of an independent tank battalion in some divisions raised the total considerably by 1975. Today, three-fourths of the older T-54 and T-55 medium

DEFENSE NEWS BRIEFS

Army Stabilizing CONUS Tours at Three Years

Army has ordered some 10 changes in personnel assignment policies to reduce personnel turbulence and associated costs.

Tour lengths within the Continental United States will be set at three years, both tour completion and tour extension are encouraged and no PCS moves will be made solely because of the length of time of a duty station.

Under the new policies even general officer assignments will be for a minimum of two years.

Navy Probe Reveals Improper Recruiting

A Navy investigation has revealed some 260 cases of improper recruiting since September 1975, in the Nashville Recruiting District, including 172 cases of failure to meet standards and 88 cases of recruitment without required waivers.

Implicated are 78 Navy recruiters, with possible action ranging from non-judicial punishment to courts martial.

Improper practices included failure to maintain and account for testing materials.

Search For Nuclear Participants Continues

About 13,000 former Service personnel have called the Defense Department's toll-free numbers to offer information or receive data about their participation in atmospheric nuclear tests conducted from 1946 to 1963.

DoD continues to press the search for the some 250,000 to 300,000 participants, and has several toll-free or collect telephone numbers around the country.

They are: Maryland—(800)492-8105 toll free; Alaska—(202)295-0586 collect; Hawaii—422-9213; and all other states—(800)638-8300 toll free.

Purpose of the program is to help the scientific community determine if there are biomedical effects on people exposed to low-level radiation.

So far, some 241 individuals have reported they have cancer.

Military Construction Bill Goes to Congress

The Department of Defense has submitted to Congress a Military Construction Authorization Bill for fiscal year 1979 which totals $4.24 Billion.

The funding was requested in support of the Military departments, the Defense agencies, the Guard and Reserve forces, and the military Family Housing and Homeowners Assistance Program.

USAF Band Reorganizes

Air Force is reorganizing its bands, and the plan will cut manpower by 128 spaces through the elimination of the 776th Air Force Band at Howard AFB, C.Z., and the transfer of the 541st Air Force Band from Luke AFB, Ariz., to Peace Air Force Base, N.H.

A-10 Forward Locations Slated for Germany

The Federal Republic of Germany has agreed, in principle, to the establishment of forward operating locations in Germany for A-10 aircraft to be assigned to the 81st Tactical Fighter Wing based in England.

The A-10s will begin arriving in early 1979 and will be based at RAF Stations Bentwaters and Woodbridge, where the 81st is currently equipped with F-4D Phantoms.

tanks opposite the NATO Central Region have been replaced by the more modern T-62 and T-64 models.

Conventional artillery howitzers and multiple rocket launchers organic to the motorized rifle division substantially increased between 1965 and 1977, while tank division artillery weapons also increased dramatically. In 1965, some 30-35 towed and self-propelled antiaircraft artilllery pieces constituted the total air defense assets of both type divisions. Each now has almost twice that number of air defense weapons, including self-propelled antiaircraft artillery and vehicle-mounted surface-to-air missiles. Additionally, a large number of portable surface-to-air missiles are organic to both divisions.

As weapons systems increased, personnel strength rose proportionately. New weapon systems continue to appear with ground units. Recent new systems include the T-64 and T-72 tanks; an innovative infantry combat vehicle, the BMP; new 122 mm and 152 mm self-propelled howitzers, a new heavy-caliber multiple rocket launcher, and several divisional surface-to-air missiles. Soviet tactical nuclear capabilities also continue to grow.

Non-Soviet Warsaw Pact forces are essential elements of the Warsaw Pact capability for attack of the NATO Central Region. Since 1965, East European forces opposite the NATO Central Region have remained constant numerically but were qualitatively enhanced. The Pact could launch a coordinated attack against the NATO Central Region after a short period of preparation and without prior reinforcement.

PRC GROUND FORCES

In response to increased tensions following the 1969 border clashes with the Soviet Union, the PRC initiated a major shift in force deployment. The composition and disposition of Chinese forces in the north underline the PRC's apprehension regarding Soviet intentions in the area. The PRC maintains the bulk of its armored force in northern China.

Although the PRC has experimented with mechanized units, there are no indications that substantial mechanization or motorization of infantry units will occur in the near term. The primary emphasis appears directed toward upgrading the infantry division armor regiments and independent tank regiments. Additional improvements include expanding river crossing capabilities, increasing the firepower of artillery units, and upgrading local force capabilities.

The majority of China's regular ground force units are deployed in the vicinity of their expected wartime positions and are close to full strength in personnel and equipment.

UNITED STATES GROUND FORCES

In order to support NATO, and to meet the increased Warsaw Pact threat, the United States has raised its Active Army force from 13 to 16 divisions. The end strength for FY 1977 was 781,000. One of the additional 3 divisions achieved deployment readiness status in FY 1977 and the other two will be ready by the end of FY 1978. This will appreciably increase U.S. strategic posture by raising U.S.S.R. perception of U.S. capability, which in turn is expected to lessen the likelihood of Soviet adventurism.

Permanent deployment of an additional brigade to Europe, from the Fourth Mechanized Division, has been completed as planned. A second brigade has been rotated to Germany and will permanently deploy to the NATO Northern Army Group area in late 1978 as facilities become available.

The conversion of two Army infantry divisions to mechanized infantry will further enhance visible deterrent power and will underscore U.S. resolve to meet its NATO commitments.

Major Weapon Systems

OVERVIEW: INVENTORY COMPARISON

Chart 1 provides a comparison of U.S., U.S.S.R. and PRC inventories of selected major ground force weapons and equipment.

Major Weapons and Equipment —Ground Forces

	US	USSR	PRC
TANKS	10,000	45-50,000	8-9,000
APC & FIGHTING VEH.	22,000	45-55,000	2-3,000
ARTILLERY	5,000	20,000	15-18,000
HEAVY MORTARS	3,000	7,000	5-6,000
HELICOPTERS	9,000	3,500	3-400

CHART NO 1

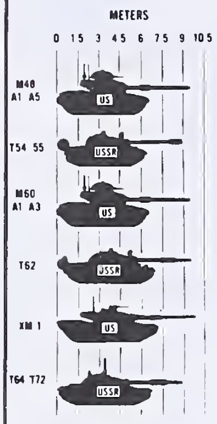
The United States has not attempted to match the U.S.S.R. in numbers of ground force personnel or weapons, but has relied instead on technology as a force equalizer. However, evaluation of new-generation Soviet tanks, armored vehicles, self-propelled artillery, and missiles shows that the technological advantage of the United States over the U.S.S.R. is rapidly diminishing.

TANK FORCES

The Soviet tank force consists of 45-50,000 medium and heavy tanks, most of which are in units and mobilization divisions. The T-64 and T-72, the best Soviet tanks, have an improved rangefinding capability, possibly incorporating a laser rangefinder; a 125 mm gun; and an improved suspension system. Owing to their similarity, the T-64s had previously been reported as T-72s. Other major items of equipment in the inventory comprise between 45,000 to 55,000 armored personnel carriers (APCs) and fighting vehicles, almost 20,000 artillery pieces, and about 7,000 heavy mortars.

The U.S. tank inventory is less than one-quarter of the estimated U.S.S.R. inventory. The U.S. inventory is now about 10,000; the U.S. Army's authorized acquisition objective is approximately 14,000.

COMPARISON OF US AND USSR TANKS



	WEIGHT (SHORT TONS)	SPEED (KM/HR)	MAIN ARMAMENT	MUZZLE VELOCITY (MPS)	MAXIMUM EFFECTIVE GUN RANGE	IOC EARLIEST/LATEST SERIES
M48 A1 A5	52 / 54	50	90 MM / 105 MM	1,275 / 1,584	1,250 METERS / 1,850 METERS	1952 / 1976
T54 55	39 68	50	100MM TANK GUN 0-10T2S	1,372	1,200 METERS	1949 / 1958
M60 A1 A3	57.3	50	105MM	1,584	1,850 METERS	1960 / 1979
T62	41 39	50	115MM SMOOTH BORE MODEL U-5TS	1,615	1,500 METERS	1961
XM 1	58	50–60	105 120MM ?	1,584 ?	2,000–3,000 METERS	
T64 T72	/	/	125 MM			/ 1973

The main U.S. battle tank is the M-60 series, which comprises two-thirds of the inventory. The M-60A1 is comparable to the Soviet T-62. A comparison is shown on Chart 2.

The U.S. M-60 series will be in the U.S. inventory until at least 1990. By FY 1979, the 105 mm gun M-60 tank will have replaced the old 90 mm gun M-48 tanks in both active and reserve Marine Corps units.

The Army and Marine Corps have undertaken a program of product improvement of the M-60A1 tank designed to increase reliability, durability, firepower, mobility and night fighting capability.

Additionally, in order to alleviate the critical near term shortage of 105 mm gun tanks, the Army is converting its 90 mm gun M-48 series tanks to a 105 mm gun configuration. This tank, the M-48A5, is being issued to some National Guard armor units.

For the 1980s, the Army has developed a new main battle tank, the XM-1, designed to provide a significant improvement in offensive ground combat capability by improving armor ballistic protection, cross-country agility and firepower. However, the XM-1 is not yet in production.

ARMORED FIGHTING VEHICLES

The newer Soviet fighting vehicles are the air-transportable amphibious armored combat vehicles, the BMD, and the amphibious armored infantry combat vehicle, the BMP. Both are capable of firing antitank guided missiles, a tank fighting capability not built into the current series of U.S. armored personnel carriers.

The air transportable BMD has been introduced into all Soviet airborne divisions. Both the BMP and BMD are well suited for the Soviet offensive doctrine. They can keep pace with tanks and, if conditions warrant, infantry forces can fight without dismounting from them.

The United States has no armored fighting vehicle as such, but relies heavily on the lightly armored M-113 type personnel carrier to transport infantry into battle. This armored personnel carrier first entered the Army inventory in 1959 and is not designed for mounted combat.

ARTILLERY

The Soviets are developing a family of highly mobile self-propelled artillery. The 122 mm M-174 and 152 mm M-1973 have been produced and deployed for several years. A new larger caliber (possibly 240 mm) rocket launcher with 10-12 tubes mounted on a modified truck chassis has been deployed in the Group of Soviet Forces Germany, and the Soviet Far East Military District.

The PRC artillery standardization program apparently has adopted a basic "family" of towed pieces, including the 122 mm and 130 mm guns and the 152 mm gun-howitzer, all of which are mounted on the same type carriage.

To help counter the U.S.S.R. and PRC numerical superiority in artillery weapons, the United States is developing a number of improved longer-range cannon systems, the General Support Rocket Systems, and new munitions. A new development is the Army's laser-guided Copperhead artillery projectile which is designed to hit a moving or fixed target with a single shot. The nonnuclear Lance missile and the General Support Rocket System are to be fielded.

SURFACE-TO-AIR MISSILES

In the 1980s, the U.S. and U.S.S.R. ground forces will each face an air threat consisting of large numbers of versatile, fast, maneuverable aircraft having electronic devices to neutralize defense systems and capable of delivering ordnance with extreme accuracy.

To meet this threat, the Soviets have deployed several surface-to-air missile systems, the SA-4, -6, -7, -8, -9, which are designed to provide air defense for ground forces.

The ***US NIKE HERCULES*** and basic ***HAWK*** surface-to-air systems reflect 15 to 25-year-old technology and are relatively costly to operate and maintain. As a result, the basic ***HAWK*** has been replaced by the ***IMPROVED HAWK*** system. Both systems, the ***IMPROVED HAWK*** and the ***NIKE HERCULES,*** are programmed to be replaced during the 1980s by the ***PATRIOT.*** Each ***PATRIOT*** fire section will be able to engage a number of targets simultaneously, maintain effectiveness in the face of enemy countermeasures, and require less maintenance and fewer operating personnel than present U.S. systems. ***PATRIOT*** entered full-scale engineering development in early FY 1977.

The ***US ROLAND*** surface-to-air missile will complement ***PATRIOT*** in the rear battle area. ***ROLAND*** is now in preparation for testing prior to a production decision in September 1978. ***ROLAND*** will provide all-weather, day or night, low altitude air defense. A man-portable ***SAM*** system, ***STINGER,*** is being developed to replace the shoulder-fired ***REDEYE*** missile.

A new ***Division Air Defense (DIVAD) Gun*** to replace the ***VULCAN*** in the forward battle area will soon begin development. The ***DIVAD Gun*** will be a radar-directed air defense gun system with either 35 mm or 40 mm twin cannons in an armored turret mounted on a tracked vehicle.

ANTITANK WEAPONS

The Soviet Union deploys ***SNAPPER, SAGGER,*** and ***SWATTER*** antitank missiles which are generally ground or vehicle mounted. The dismounted Soviet Infantry squad's primary antitank weapon is the grenade launcher, RPG-7.

While the PRC does not appear to have an anti-tank guided missile system, it does have a large inventory of 82 mm recoilless guns, and rocket propelled grenades. The PRC has expressed interest in acquiring Free World antitank guided missile technology and has demonstrated a fledgling capability to develop and use such technology. In view of the armor-heavy nature of Soviet Ground forces, the introduction of an antitank guided missile system into the PRC inventory is anticipated.

U.S. Army and Marine Corps forces are continuing to improve their antitank capabilities with the addition of the ***TOW*** antitank missile. ***TOW*** can destroy enemy tanks, armored vehicles and field fortifications to a range of 3,000 meters. If a helicopter platform is used, the range is increased to 3,750 meters.

The ***DRAGON,*** now fielded with U.S. ground forces in Europe, is a man-portable, antitank guided missile system, which can defeat the heaviest currently deployed armored vehicle. The ***DRAGON*** will be organic to all infantry companies, and will provide antitank or assault fire at ranges of 60 to 1,000 meters.

Although basic development for the ***TOW*** and the ***DRAGON*** is complete, a thermal-imaging, night sight for both systems is being developed to provide a 24-hour capability.

The October 1973 Middle East conflict has underscored the need for an improved infantry antiarmor weapon. The ***Advanced Heavy Antitank Missile System (AHAMS)*** will be designed to defeat advanced armored vehicles, under modern battlefield conditions. In addition, this system will have an improved rate of fire and extended range to improve the odds against a numerically superior force. A secondary capability for self air defense against attack helicopters will be incorporated in the development process. A plan to explore the potential of a NATO cooperative effort has been initiated and discussions are taking place in appropriate NATO groups.

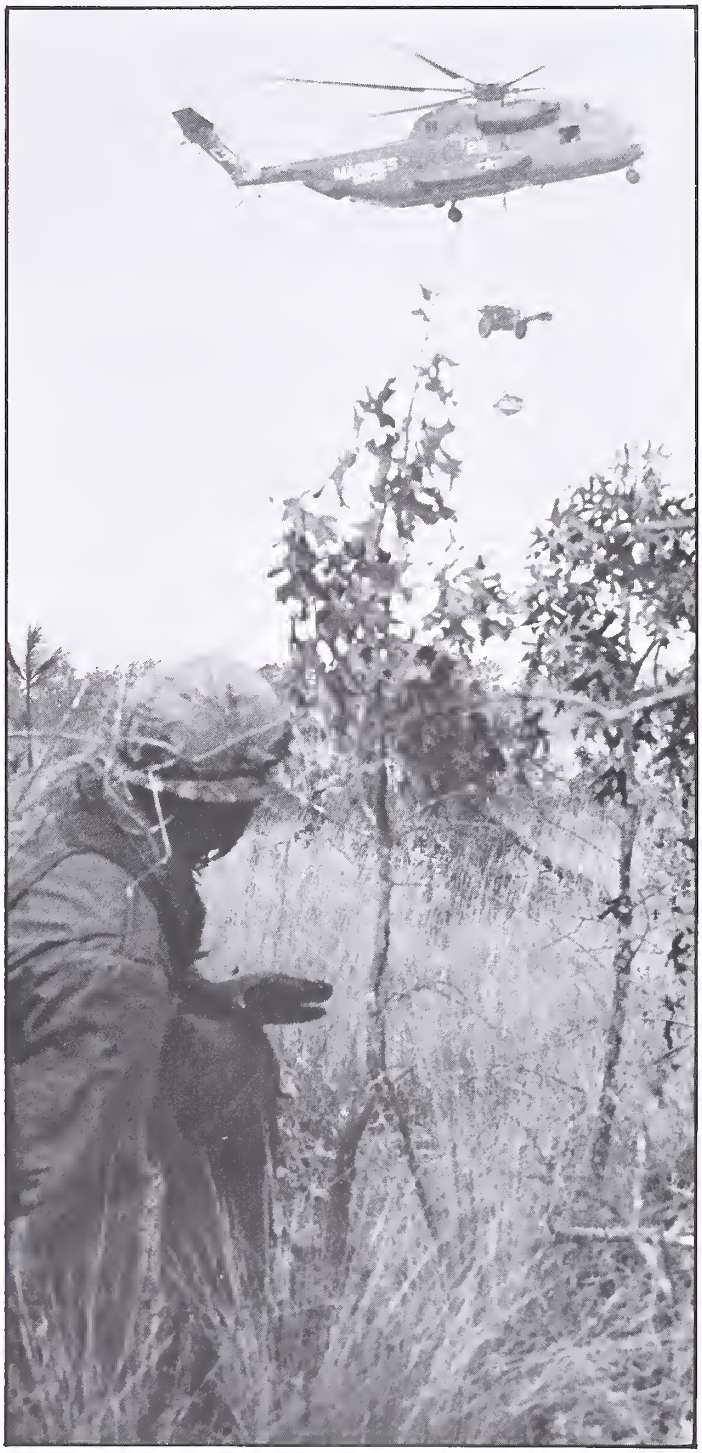
The ***HELLFIRE*** is a laser-guided missile system that will provide the ***Advanced Attack Helicopter (AAH)*** with a point targeting weapon for the destruction of tanks and other hard targets at long standoff ranges. Current development is coordinated with the development of the ***AAH,*** discussed in the following section.

HELICOPTERS

About 7,000 civil and military ***HIP*** helicopters have been produced to date. ***MI–8 HIP*** and ***MI-24 HIND*** helicopters are now in Soviet tactical helicopter regiments.

The United States continues to develop the ***Advanced Attack Helicopter (AAH).*** The ***AAH*** weapon system will provide a day, night and adverse weather antitank capability not presently available. The ***AAH*** will be armed with the ***HELLFIRE*** antiarmor missile system and a 30 mm cannon. It will be armored against the 12.7 mm projectile and will include battlefield survivability features.

A Marine watches as a CH-53 helicopter brings a 105 mm howitzer into a landing zone during a training exercise.



PRINCIPAL SURFACE COMBATANTS

(FY 1978)

	US	USSR
CARRIERS (CV/CVN)	13	3*
CRUISERS (CG/CGN)	27	35
DESTROYERS (DD/DDG)	64	90
FRIGATES (FF/FG)	65	105
	169	233

* Moskva and Kiev Classes

CHART NO 3

Until the ***AAH*** is available, the AH-1S attack helicopter, with ***TOW*** antitank missiles, will provide U.S. ground forces with additional antiarmor capability. The AH-1S will be retained in Active and Reserve Component units even after ***AAH*** becomes available.

The Army's first squad-carrying assault-lift helicopter, the UH-60A ***BLACKHAWK,*** will replace the current UH-1 in assault helicopter, air calvalry, and aeromedical evacuation units.

The CH-53E ***Heavy Lift Helicopter*** is planned for use by the Marine Corps. The CH-53E, with a 16-ton capacity, has twice the lift capability of the present CH-53D.

Naval Surface Forces

OVERVIEW

Summarized in Chart 3 are the U.S./U.S.S.R. major active principal surface combatant ships for FY 1978.

Chart 4 is an inventory comparison of U.S., U.S.S.R., and PRC major active principal surface combatant ships in active service.

U.S.S.R. SURFACE FORCES

Soviet general purpose naval forces include three aircraft carriers (one an ASW type and two for guided missile helicopters), 25 guided missile cruisers, 10 light cruisers, 35 guided missile destroyers, 55 destroyers, and 105 frigates for a total of 233 ships. This force is expected to decrease slightly in numbers through the 1980s; however, with the continuing addition of heavier and more complex ships, the force's capabilities will continue to increase.

The main strength of the Soviet surface fleet lies in its increasing numbers of large relatively new, well armed, high-speed missile ships. These ships have excellent communications and electronic warfare capabilities and are equipped with offensive and defensive missile systems capable of firing both nuclear and conventional ordnance. Current principal surface combatant construction and modernization programs indicate Soviet emphasis on improving open ocean capabilities.

Modern Soviet combatants are more heavily armed than their Western counterparts. Many are now equipped with antiship cruise missile systems which pose a significant threat to Western ships. Soviet ships apparently have been designed to optimize their effectiveness for short, intense engagements. Their antiship missiles provide a capability for seizing the initiative in an exchange. While air filtration systems and other chemical, biological and radiological (CBR) measures for crew protection have been provided, Soviet ships have poor habitability in comparison to U.S. ships. Although damage control and underway replenishment capabilities are limited, improvements are being made in these areas. Few Soviet ships have sonars comparable to those common in the West. However, their sonars are being upgraded.

SOVIET FLEET MODERNIZATION

The Soviet naval modernization program continues to introduce new classes of combatants, as well as upgraded variants of older ships.

In mid-July 1976, the first ***KIEV*** class aircraft carrier deployed to the Mediterranean Sea and transited to the Northern Fleet. A second carrier of the ***KIEV*** class is expected to enter service in 1978. Construction of a third ship in this class has begun and is expected to join the fleet in late 1980.

The ***KIEV*** is not designed to conduct intensive air operations. Nevertheless, it is the largest combatant ever built in the Soviet Union and represents a significant increase in naval capability. It is expected to carry a mixed air wing complement of 30-36 ***V/STOL*** aircraft and ASW helicopters. ***The KIEV*** is fitted with surface-to-air and surface-to-surface missiles, antisubmarine rockets and torpedoes, and various gun systems to perform antiship, antisubmarine and antiair missions.

Five ***KARA*** class guided missile cruisers are now operational and construction continues on this class. This is the largest gas turbine combatant in the world and has two different air defense missile systems: the SA-N-3 and SA-N-4. The SA-N-3 also has an antisurface capability.

Nine ***KRESTA-II*** guided missile cruisers are completed and one is on sea trials.

The ***KRIVAK I*** and ***II*** class destroyers are the most heavily armed combatants for their size in the world. These destroyers have two point-defense surface-to-air missile launchers, ASW cruise missiles, two medium caliber gun mounts, and torpedoes.

The first ***KASHIN*** class guided missile destroyer joined the Soviet fleet in 1963. Construction of this class has ended, but a number have now undergone modification.

In 1975, the Soviets launched a new class of frigate, ***KONI.***

The Soviet surface combatant construction program has improved Soviet naval capabilities and a steady rate of construction is expected. In the future, new classes of surface combatants with improved propulsion, electronic countermeasures and weapon systems are expected. Through refit and modernization, the newer classes in operation now will probably be with the Soviet Navy for the next ten years.

The Soviet amphibious assault capability consists of about 12,000 Naval infantry troops and the assault ships to lift them. Amphibious assault shipping appears to be the limiting factor at this time. The Soviet amphibious shipbuilding effort has been consistent, but deliberately paced. The Soviets are also investigating new shipping concepts which might be applicable to the amphibious assault mission. However, the Soviets have not yet tried landing forces against opposition geographically distant from the U.S.S.R. The writings of Admiral Gorshkov describe the lack of this particular capacity as a significant shortcoming for a nation seeking world leadership.

The Soviets have increased their naval mining capability. New capabilities have increased the threat to shipping and challenge further the already inadequate U.S. mine countermeasure forces.

PRC SURFACE FORCES

The PRC has an inventory of 19 principal surface combatants, including Soviet and indigenously designed destroyers, and a variety of patrol frigates. Many of these units are armed with the CSS-N-1 surface-to-surface cruise missile. These ships have a good antiship capability, but have only conventional air defense and antisubmarine warfare weapons, limitations which greatly restrict their operational scope and make extended open-ocean operations unlikely. These units are deployed to major naval bases which protect strategic areas.

Responsibility for coastal defense of the PRC rests primarily on the missile boat force, consisting of more than 100 OSA and ***HOKU*** class missile attack boats armed with the CSS-1 surface-to-surface cruise missile.

UNITED STATES SURFACE FORCES

The U.S. Navy's largest problem has been, and remains, too few surface combatants. However, the current program reverses the downward force level trend of the past few years. The aircraft carrier is the principal U.S. surface combatant, performing the fundamental functions of sea control and projection of power ashore. Since the number of large deck carriers is not expected to increase, qualitative improvements in other surface combatants are being sought. For example, the nuclear powered cruiser now under development will have the ***AEGIS*** air defense weapon system. ***AEGIS,*** with its increased capabilities, is the most advanced shipboard combat system envisioned to date. It is designed to provide area air defense in a high density, high threat, antiship missile environment. Major characteristics of the system include a long detection range, automatic detection and tracking of multiple targets, automatic special threat alert, immunity to current electronic countermeasures, and a high track storage.

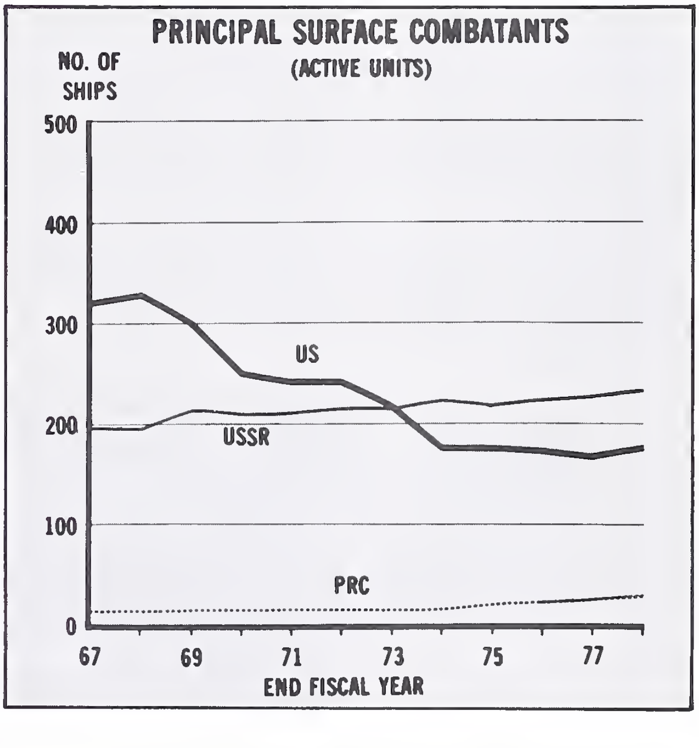
The United States has an urgent need to deploy ***AEGIS*** to the fleet. The Navy proposes to put it on two platforms, the DDG-47 destroyer approved by the Congress for FY 1978, and the CGN-42 nuclear powered cruiser. A mix of nuclear and conventionally powered ***AEGIS*** ships will strike a balance between numbers and individual ship capabilities, thus providing an effective air defense system that is an integral part of all major fleet forces.

It is intended that one CGN-42 class nuclear powered ***AEGIS*** cruiser be built to operate with each nuclear powered aircraft carrier (CVN) in order to complement the CVN's high speed endurance. These ships will operate with other nuclear powered cruisers and submarines, composing all nuclear powered task groups. These nuclear powered task groups will have the capability to be dispatched immediately, in time of tension, to proceed at high speed regardless of distance to the scene of a crisis, without pausing to refuel, and arrive in the objective area ready for combat.

The Navy must replace a number of aging cruisers and destroyers between the mid-1980s and 1990s. To avoid force level reductions and loss of capability, new classes of destroyers and cruisers are planned for the Navy's near-term ship-building program.

The Navy has also programmed more numerous, less expensive ships, such as the guided missile frigates, for use with amphibious task forces, underway replenishment groups and convoys. These ships have a substantial capability against enemy air, surface and subsurface threats, and provide most of the anticipated force level increase.

U.S. Marine Amphibious Forces (MAF) provide a unique forcible entry capability valuable to a maritime nation with vital overseas interests. In concert with Navy task forces and supported by both Navy and organic aviation, the versatile MAFs are capable of establishing or reestablishing U.S. presence ashore, and conducting follow-on operations. These forces are a fundamental element of the maritime forces required to fulfill the primary naval functions of sea control and power projection.



Submarine Forces

OVERVIEW

A comparison of U.S., U.S.S.R. and PRC general purpose submarines is shown in Chart 5.

U.S.S.R. SUBMARINE FORCES

The U.S.S.R. continues to have the world's largest submarine force and is expected to continue replacing older submarines with newer, more effective units. The current decline in numbers of diesel powered submarines is expected to continue.

ATTACK SUBMARINES

The Soviet torpedo attack submarine (SS, SSN, SSR) force consists of 195 active submarines with additional vessels in reserve. Thirty-seven active and two reserve units are nuclear powered.

Four classes of Soviet torpedo attack submarines, two nuclear powered, are currently under construction.

FOXTROT class diesel submarines, which are still being built for export, continue to constitute the bulk of the operational Soviet submarine force.

PRC SUBMARINE FORCES

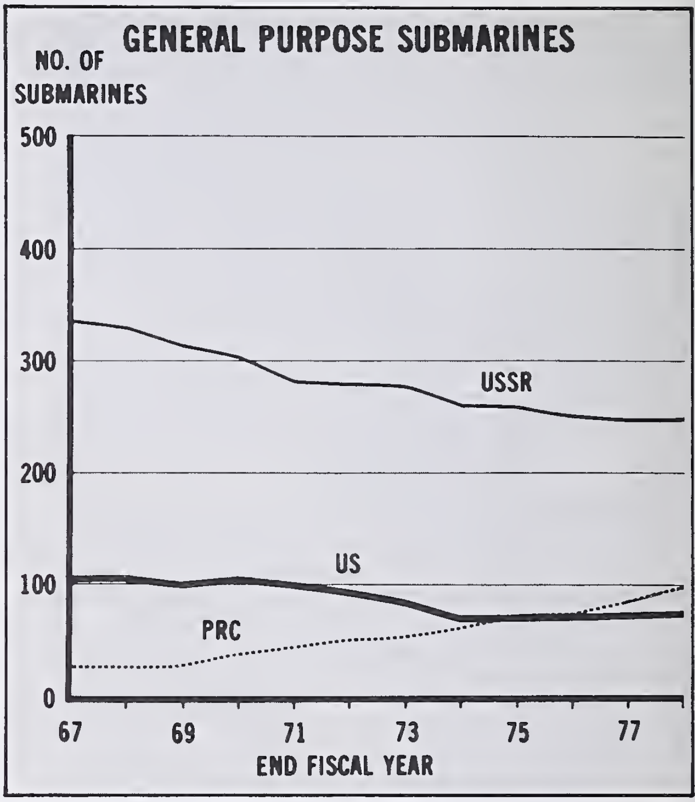
The PRC submarine force consists of 65 diesel attack submarines; one diesel powered ballistic missile submarine employed as an R&D platform for submarine ballistic missile development, and one nuclear powered attack submarine. This force is still at a comparatively elementary stage of technical and tactical development.

UNITED STATES SUBMARINE FORCES

U.S. attack submarines currently operational include the advanced SSN 688 LOS ANGELES class. Four have been commissioned. All meet or exceed design goals and are the finest ASW platforms in existence today. Thirty-two SSN 688 class attack submarines have been authorized through FY 1978. Construction will continue until at least the mid-1980s.

This modern nuclear submarine can operate independently and effectively in enemy controlled waters and will deploy in forward patrol areas to conduct offensive operations against enemy submarine and surface forces. The ship will be available to support carrier task groups, convoys, underway replenishment groups, and for open-ocean intercept and cruise missile land attack tasks. The programmed building rate will average two SSNs per year through the early 1980s.

The introduction of the ***HARPOON*** and antiship ***TOMAHAWK*** will provide U.S. attack submarines with a medium and long-range antiship capability. The introduction of the land attack ***TOMAHAWK*** will provide a submarine weapon for use in a theater nuclear role.



Naval Missiles

U.S.S.R. NAVAL MISSILES

Since the late 1950s the Soviets have employed more than a dozen types of cruise missiles on their submarines, surface ships, and aircraft. In the early 1960s, the Soviets

This Blinder bomber is part of the Soviet Naval Aviation force which is the primary threat to U.S. Navy surface operations.

began to develop several cruise missile and rocket delivered ASW weapons. Most antiship cruise missiles of the Soviet Navy use terminal homing on a target.

A growing proportion of the Soviet Navy is equipped with air defense missiles which provide an overlapping capability ranging from basic point defense missiles to longer range.

The SA-N-3 is a surface-to-air air defense missile fitted to principal surface combatants such as the ***KIEV CVSG,*** the ***MOSKVA CHG,*** and the ***KRESTA II*** and ***KARA*** cruisers which have entered the force since 1968.

The SA-N-4 is a missile system for close-in point defense against aircraft and possibly cruise missiles.

UNITED STATES NAVAL MISSILES

The ***HARPOON,*** an antiship cruise missile, has been developed and is currently deployed. The ***TOMAHAWK,*** a cruise missile designed to carry out antiship, and, as necessary, land attack missions, is under development.

The ***HARPOON,*** an all-weather cruise missile, is to be the primary antiship weapon system for U.S. naval forces, and is planned for installation in most cruisers, destroyers, frigates, nuclear attack submarines, and some shore and carrier based aircraft, including the P-3 and A-6. The ability to employ ***HARPOON*** in other patrol and attack aircraft, as well as the B-52 bomber, has been validated.

The basic ***HARPOON,*** which is common to all three launch platforms, is powered by a turbojet engine. After launch, it descends to 100 feet above the water. This sea skimming flight profile, along with active terminal guidance radar ensures a high probability of penetrating enemy defenses and hitting the target. The missile has a maximum range of 60 nautical miles (nm) with a 500 lb. conventional warhead, and has demonstrated excellent hit probabilities against destroyer-size targets out to this range. ***HARPOON*** is compatible with launch systems for other missiles.

HARPOON has completed operational evaluation and has been provisionally approved for service use. Full approval for service use will be granted when certain production reliability criteria are met. The initial operational capability for surface ships has been met. Introduction into submarines has begun and introduction into fleet aircraft will take place in 1978.

TOMAHAWK is being developed as an all-weather, long-range, high subsonic cruise missile. Available in both land attack and antiship versions, ***TOMAHAWK*** can be launched from submarine, surface ship, land and air platforms.

The land attack version will be capable of delivering a nuclear warhead against land targets. The land attack ***TOMAHAWK*** will fly at very low altitudes. This, coupled with terrain masking and low radar and infrared cross sections, should make defense against it extremely difficult.

The antiship ***TOMAHAWK*** will be capable of delivering a conventional warhead against enemy ships out to 300 nm.

Naval Aviation

USSR NAVAL AVIATION

The primary air threat to U.S. Navy surface operations is the Soviet Naval Aviation (SNA) force composed of about 375 ***BADGERS, BACKFIRE*** ASM bombers, and ***BLINDER*** bombers armed with both conventional and nuclear munitions. These aircraft are supported by about 150 intermediate and long-range reconnaissance and ECM aircraft, plus a ***BADGER*** tanker fleet of some 90 aircraft. Approximately 400 intermediate-range ***MAY ASW*** aircraft, shortrange ***MAIL ASW*** amphibian aircraft, ***BEAR F*** long-range ASW aircraft and the ***HOUND, HORMONE A*** and ***HAZE A*** helicopters fill out the force.

The introduction of ***BACKFIRE*** into the Soviet Navy in late 1974 significantly increased the range and overall strike capability of SNA. ***BACKFIRE*** is superior to ***BADGER*** and ***BLINDER*** in overall performance, range, speed and tactical flexibility. Some ***BACKFIRE*** probably will deploy in a long-range reconnaissance role.

The open-ocean ASW capability of the SNA consists primarily of ***MAY*** and ***BEAR F***. The MAIL provides near-zone (i.e., from the coast out to about 200 nm) ASW and maritime reconnaissance. The ***MAY's*** patrol endurance compares favorably with the US P-3. ***MAY*** and ***MAIL*** have magnetic anomaly detection (MAD) capabilities. The Soviets will probably acquire a new long-range ASW aircraft by the early 1980s.

SNA's ASW helicopter force consists of ***HORMONE A, HAZE A*** and ***HOUND*** helicopters. The ***HORMONE A*** lacks a night and all-weather sonar-dipping capability. The ***HAZE*** is being deployed in a land-based ASW role as an apparent replacement for the ***HOUND.*** Another new naval

This Soviet Forger, which was deployed aboard the KIEV in 1976, could be capable of fleet air defense, strike, close air support and reconnaissance roles.

helicopter is projected in the mid-1980s for ASW and reconnaissance roles.

SNA has ***FITTER C/D*** fighter bombers assigned to the Baltic Sea area that could be used in limited antiship strike roles or to support amphibious operations in that area.

The ***V/STOL YAK-36 FORGER,*** which was deployed aboard the KIEV in 1976, may be capable of fleet air defense, strike, close air support and reconnaissance roles. Total production will be determined by the number of follow-on carriers constructed by the Soviets.

UNITED STATES NAVAL AVIATION

The Navy's ability to gain and maintain control of selected sea areas and to project power depends in large part on the capabilities of land and sea-based, particularly carrier-based, aircraft.

The embarked carrier air wing's major systems include: the F-14A ***TOMCAT*** fighter with ***PHOENIX*** missile system, which can combat the SNA ***BACKFIRE*** and antiship missile threat; the A-7 and A-6 attack aircraft to provide the sea control strike capability; S-3 and SH-3 aircraft for ASW; and EA-6B, RA-5C/RF-8G, E-2C, KA-6D aircraft for electronic warfare, reconnaissance, early warning and tanking support. The sea-based aviation forces are augmented by long-range land-based P-3 aircraft which provide ASW and surveillance support and, if necessary, certain U.S. Air Force assets which have capabilities which can contribute to sea control and surveillance.

Naval aviation forces are further complemented by Marine Corps aviation forces integral to Marine air-ground task forces. Through a flexible operating base capability and common logistic support, the aviation elements of the MAFs can augment carrier based naval aviation forces from austere land bases or from sea-based platforms.

Tactical Air Forces

OVERVIEW

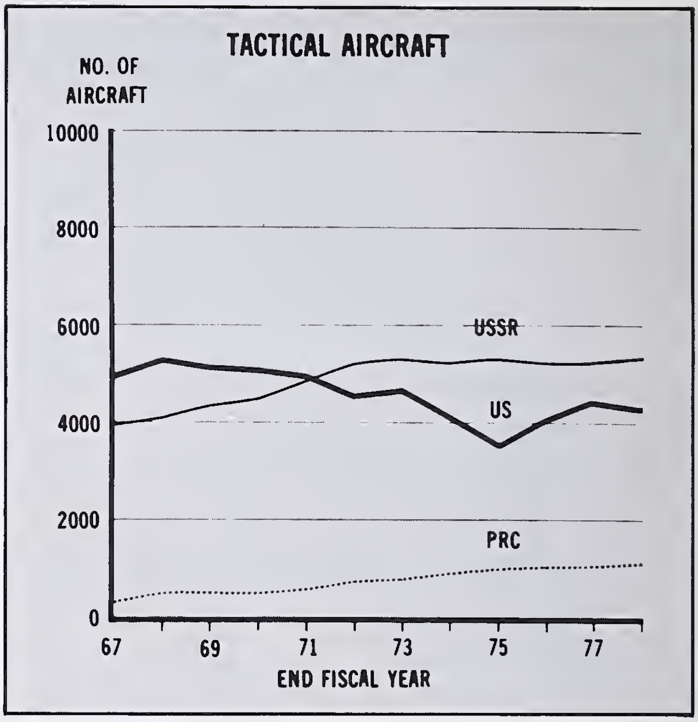
Since the late 1960s Soviet and Warsaw Pact theater air forces have grown in numbers and improved in quality. During this period, the U.S. tactical aircraft inventory dropped below that of the Soviet Union.

Shown on Chart 6 are the U.S./U.S.S.R. and PRC tactical aircraft inventories, including fighter, attack, intermediate-range bomber, and reconnaissance aircraft.

U.S. figures include all aircraft in active and reserve components of the Air Force, Navy and Marine Corps, except those used for training (about 900 in 1975) and those assigned to Continental Air Defense (about 285 in 1976). Also excluded are aircraft used in research and development, test and evaluation, and spares for attrition losses.

The Soviet figures similarly exclude tactical-type aircraft used for training (about 3,000 in 1977), and fighter aircraft assigned to homeland air defense (about 2,600 in 1977).

Soviet tactical aviation has offensive capable tactical air units in the U.S.S.R. and with the four Groups of Soviet Forces in East Germany, Czechoslovakia, Poland, and Hungary. The primary emphasis for Soviet tactical aircraft is against NATO's Central Region, with the bulk of the remaining aircraft deployed against NATO's Southern Region and the Far East.



In the PRC, most fighter aircraft, over 4,000 in 1977, are assigned a strategic home defense mission. The PRC figures, therefore, include only the tactical aircraft fighter bombers and medium bombers in the active inventory of the air force and naval air force. However, home defense interceptor units participate in ground support training exercises. It is believed that some of these strategic home defense aircraft would be utilized in a tactical role as required. No reserve aircraft figures are available for the PRC.

TRENDS

USSR TRENDS

The U.S.S.R. traditionally has emphasized air defense in its tactical air forces and has a clear quantitative advantage over the United States in this category. Since 1972, the new SU-17 ***FITTER C/D,*** the MIG-23 ***FLOGGER B,*** MIG-27 ***FLOGGER D*** and the Sukhoy ***FENCER A*** have become operational. Compared to earlier Soviet tactical fighters, these new aircraft have substantially improved range, payload, avionics and electronic countermeasures capabilities, thereby providing a multiple mission potential. The new types now comprise a significant portion of the force.

FENCER, the most advanced tactical aircraft in the Soviet inventory, is capable of conducting nuclear strike missions from bases in the western USSR against a wide variety of European targets.

The ***FLOGGER*** and ***FITTER C/D*** are capable of striking targets in most of NATO Europe from bases in the western USSR. During sustained conventional operations, maximum use of their payload and range capabilities could be made if those ***FLOGGER*** and ***FITTER C/D*** aircraft currently in the western USSR would deploy to forward bases.

The MIG-25 ***FOXBAT B/D*** has substantially improved the reconnaissance capabilities of Soviet tactical air forces.

The Soviets are also developing a variety of new air munitions to complement this growing inventory of modern, multi-mission aircraft.

Since 1969, the Soviets have been phasing third generation tactical aircraft into their forces in Eastern Europe. The latest phase in the upgrade of Soviet tactical air force inventories opposite NATO's Central Region is nearing completion.

PRC TRENDS

The PRC tactical inventory of more than 1,000 aircraft consists of F-9 ***FANTAN,*** MIG-15 ***FAGOT*** fighter-bombers, IL-28 ***BEAGLE,*** and TU-2 ***BAT*** medium-range bombers. The PRC aircraft industry is producing both the ***FANTAN*** and ***BEAGLE.***

In August 1977, the PRC forces conducted a joint service exercise opposite Taiwan. During the exercise, attack aircraft were reported bombing and strafing in support of parachute assaults, with the entire force protected by interceptors. Although the exercise was elementary by U.S. standards, it did show increased sophistication in the use of tactical air power in the PRC.

UNITED STATES TRENDS

The number of U.S. tactical aircraft, after declining for several years through obsolescence and attrition, will begin to stabilize at about 4,500 aircraft, if approved programs are fully funded. While the numerical advantage remains with the Soviets, a substantial modernization program for U.S. aircraft would reduce the impact of this disparity. Nevertheless, rising cost associated with high-performance aircraft continues to slow force modernization efforts.

The F-14 and F-15 remain the two most capable fighters in the world. Their primary role is to attack and destroy the enemy air threat and to provide localized air superiority over the land or naval battle area. Having a sufficient number of these aircraft is critically important, if the U.S. is to defeat the growing numbers of sophisticated Soviet aircraft. The high cost of such aircraft precludes equipping the total fighter force with them. Therefore, the USAF F-16 program and the Navy/Marine F-18/A-18 programs are designed to provide less costly, more specialized aircraft to meet tactical aviation requirements.

FIGHTER/ATTACK AIRCRAFT

USSR FIGHTER/ATTACK AIRCRAFT

The newer generation of fighter aircraft, the MIG-21 ***FISHBED,*** J/K/L/N series, is the backbone of Soviet tactical aviation. A large number are deployed to Soviet units in the forward area, and in the U.S.S.R. Export version ***FISHBED*** are assigned to Warsaw Pact allies. Additional ***FISHBED L*** are assigned to the homeland air defense forces. These new ***FISHBED*** are equipped with cannon, carry up to double the number of air-to-air missiles of the previous D/F versions, and have greater fuel loads to extend their combat radius.

The MIG-23 ***FLOGGER*** was first deployed in 1970, and has deployed in accelerated numbers since 1973. The ***FLOGGER B*** will soon displace the ***FISHBED*** as the primary air-to-air tactical weapon system. The ***FLOGGER*** is currently deployed with Soviet Forces in the forward area and in the Soviet interior. The weapons, avionics and fuel payload of the ***FLOGGER*** are all superior to those of the ***FISHBED.*** A ground attack ***FLOGGER*** variant, the ***FLOGGER D***, has been deployed with ground attack units.

The SU-17 ***FITTER C/D*** ground attack fighter represents a major improvement over the earlier ***FITTER*** models. The ***FITTER C,*** with its more powerful engine and improved avionics, is in a completely different class from the earlier A and B variants.

The Sukhoy interdiction fighter-bomber, ***FENCER A,*** entered operational service for the first time in December 1974. The ***FENCER*** is the first modern Soviet aircraft that provides for a variety of guided and unguided air-to-ground weapons and appears to be the first Soviet fighter specifically designed for ground attack.

Significant additional deployments of the reconnaissance version of the MIG-25, the ***FOXBAT B/D*** have continued.

UNITED STATES FIGHTER/ATTACK AIRCRAFT

The plan for modernization of the tactical air forces continues. In the case of fighters, procurement of 509 F-14s is planned. The fifth full-scale deployment of the F-14 on board the USS J.F. KENNEDY was completed in August 1977. The six-month deployment surpassed the operational readiness statistics of prior cruises. The F-14 ***PHOENIX*** weapon system reliability continues to improve, and adds an operational capability to the fleet which is a quantum increase over that provided by the F-4.

The remainder of the Navy F-4 force will be replaced by the fighter version of the F/A-18 commencing in 1984. The first development test flight is scheduled for the fall of 1978. The initial operational squadron for the Marine Corps is scheduled for FY 1983 and for the Navy in FY 1984.

The F/A-18 is a multi-mission aircraft designed for the strike escort fighter and the light attack roles. The fighter version, the F-18, will be a superior close-in fighter, and will have some beyond-visual range missile capability for the air intercept role. The attack version, the A-18, will serve as a replacement for the Navy's A-7E in the late 1980s. It is programmed for an initial operational capability in FY 1985. The weapon control system is optimized for both the air-to-ground mission and the air-to-air mission. Full scale development program indicates that the F/A-18 will be highly maintainable, reliable, and survivable. The F/A-18 will enable the Navy and Marine Corps to meet force level requirements for the mid-1980s and 1990s.

All-weather attack functions, including close air support for the Navy and Marine Corps, will continue to be provided by the A-6E, a version of the combat-tested A-6A with much improved reliability, maintainability and weapons accuracy. The A-6E system is currently being enhanced by addition of the Target Recognition Attack Multi-sensor (TRAM), which includes an infrared sensor, laser ranger/designator and laser receiver. Coupled with the A-6E all-weather radar, TRAM will provide the capability to acquire, identify, and make a first pass attack on enemy targets. Passive sensors for use at night or in poor weather and laser or electro-optical guided weapons as well as conventional weapons, will be incorporated in the A-6E, making it the most advanced strike aircraft in the Navy's inventory.

Marine Corps fighter requirements will be met by retaining the F-4 until introduction of the F-18 in 1983. To fulfill Marine Corps light attack missions, the A-4M and AV-8 will continue in service. The AV-8A vertical/short takeoff and landing (V/STOL) aircraft was introduced in 1971 to provide an attack aircraft capable of operating from ships, bombed-out airstrips, roads or grass airfields. The service life of the AV-8A will be extended and its capabilities improved through a Conversion in Lieu of Procurement (CILOP) program which will maintain the AV-8 in the active force until replaced by a follow-on light attack aircraft.

The Navy is embarking on a plan to convert a portion of its sea-based aviation to V/STOL. Studies indicate that appropriately capable V/STOL aircraft could accomplish the Navy's missions while providing added flexibility to fleet operations. V/STOL should be able to operate from many different ships in the Navy and from Marine remote sites. Design studies will continue, and the Navy and aerospace companies will seek innovative and competitive alternative approaches to V/STOL. First flight of the prototypes will be in 1983 with a planned initial operating capability in 1991.

The Navy's E-2C airborne early warning aircraft, successor to the older E-2B, has now been introduced to the Pacific. The E-2C/F-14 team forms an impressive Fleet Air Defense combination. Recent testing of the new advanced radar processing system (ARPS) on board the E-2C indicates significant improvement in electronic countermeasures (ECM) resistance and in detection and tracking capabilities. Five ARPS aircraft have been delivered. Outfitting of an all E-2C AEW force consisting of 12 four-plane squadrons (six on each coast) and two six-plane training squadrons is scheduled for completion in 1983.

In the U.S. Air Force, the major changes in the tactical aircraft inventory will be the continued addition of the A-10 and the F-15, and introduction of the F-16. In addition to active force improvements, the A-10 is programmed for delivery directly into the Air Reserve Forces starting in FY 1979. In 1977, the first A-10 wing became operational in the Tactical Air Command. Deployment of an A-10 wing to Europe in FY 1979 is being planned. The first 339 aircraft are fully funded; a total procurement of 733 operational and support aircraft is planned.

The A-10 has been developed as a specialized close air support aircraft to destroy armored vehicles, including tanks, at minimum cost. The A-10 is capable of delivering a wide variety of nonnuclear munitions, including ***MAVERICK*** missiles, ***ROCKEYE*** and laser-guided weapons. An air refueling capability and long loiter characteristics make the A-10 highly responsive to the needs of U.S. ground forces. The A-10's survivability features have been a primary design criterion. Its maneuverability contributes to survivability and permits operations under the low weather ceilings and in the limited visibility conditions that would be experienced in Europe. It has demonstrated excellent capabilities against Soviet made tanks in tests using the depleted uranium antiarmor 30 mm round.

The first F-15 EAGLE squadron became operational in the Tactical Air Command in FY 1977. United States Air Forces Europe (USAFE) received three squadrons of F-15s in FY 1977. The fourth USAFE F-15 squadron will become operational in FY 1979. The programmed procurement of 729 operational and support F-15s will be completed by FY 1981 with deliveries completed in FY 1983. The F-15 provides a night and adverse weather capability to counter the increasing numbers of sophisticated Soviet aircraft and has look-down, shoot-down capability.

The F-15 was designed primarily to provide an air-to-air combat capability superior to that of enemy aircraft projected for the 1980s. A recently approved modification, which will increase station keeping time, will provide either more beyond visual-range firing opportunities or an

The service life of the AV-8A will be extended and its capabilities improved through a Conversion in Lieu of Procurement program which will maintain the aircraft in active service until it is replaced by a follow-on light attack aircraft.

increase in the number of potential targets that can be engaged.

The first development F-16 aircraft flew on Dec. 8, 1976. The first active combat operational units will be introduced in FY 1980 and funding for a total of 1,388 aircraft will continue through FY 1986. Ten active and two reserve F-16 wings will be organized. The F-16's exceptional maneuvering and handling characteristics provide excellent air-to-air combat capabilities for close-in maneuvering engagements. The F-16 offers a cost effective means of modernizing and equipping U.S. tactical air forces. Arrival of the F-16 will free additional F-4s for transfer to the Reserves. F-16s are planned for direct delivery into the Reserves beginning in the mid 1980s.

In June 1975, the governments of Belgium, Denmark, the Netherlands, and Norway also agreed to purchase the F-16 to replace older aircraft. Under European/U.S. co-production arrangements, nearly 1.4 billion dollars worth of contracts have been awarded in Europe. The F-16 program represents a significant step toward NATO standardization and interoperability.

The F-16 is also a major step in reversing the trend of rising weapon systems procurement costs. The combined force of F-15s and F-16s forms an affordable and capable mix of tactical air fighters. By moving toward a force structure composed of both types of air superiority aircraft, a larger force can be maintained for equivalent budget expenditures, and block obsolescence of the aging F-4 fleet is avoided.

Suppression of Soviet air defenses in Central Europe is a most critical challenge. Modernization efforts include improvements to threat warning systems, airborne jammers, electronic countermeasures (ECM) pods, and expendable chaff/flares. Other suppression measures are improved artillery range and accuracy, 116 Enhanced Wild Weasel F-4G aircraft (24 in Europe), and continued development of the Precision Location Strike System (PLSS).

The E-3A Airborne Warning and Control System (AWACS) is an airborne surveillance and command and control system capable of detecting aircraft in both clear and ECM environments at all altitudes in strategic defensive and tactical roles. The first operational E-3A was delivered on March 24, 1977, and as of Jan. 1, 1978, five E-3As are in the USAF operational inventory. Twelve aircraft are projected by the end of FY 1978 and 19 by the end of FY 1979. The production phase includes provision for the procurement of 31 AWACS systems. Three prototype aircraft purchased with R&D funds will be refurbished for operational and support E-3A aircraft. AWACS initial operational capability is expected to be reached this year. A detachment will deploy to Iceland in FY 1979 as a replacement for the EC-121. Procurement of AWACS by NATO is contemplated.

UNITED STATES AVIATION ORDNANCE

It is believed that the U.S. currently enjoys a considerable edge over the Soviet Union in tactical air ordnance.

Precision guided munitions raise the single shot kill probability and reduce the combat exposure of the delivery vehicle. These are significant advantages.

The improvement of the accuracy and lethality of air-to-ground conventional munitions is important. The ***HARPOON*** antiship weapon, discussed earlier, and the ***MAVERICK,*** an antiarmor weapon, are being developed and procured for use against specific high value targets.

The Navy has deployed the ***WALLEYE*** weapon system which provides intermediate-range stand-off capability against heavily defended targets. The air-to-ground GBU-15, an Air Force development, has long standoff capability with electro-optical terminal guidance to produce high accuracy. Development in imaging infrared guidance, antiradiation missiles and penetrating warheads will provide future capability against point and hardened targets.

Theater Nuclear Forces

OVERVIEW

A theater nuclear capability is an essential element of successful deterrence and defense. Theater nuclear forces provide linkage between conventional and strategic nuclear forces.

In the event aggression cannot be contained conventionally, theater nuclear forces provide a capability to fight the battle and an opportunity to terminate conflict short of strategic nuclear war. Theater nuclear weapons are deployed as an integral part of U.S. theater forces to strengthen the deterrent effect of forward defense and to augment conventional forces.

Theater nuclear force (TNF) modernization within NATO is being pursued within the context of the NATO Long Range Defense Program. Initial consultations within NATO were undertaken last fall as a follow-on to the 1976 U.S. paper which raised the topic of TNF modernization within NATO. Work is now proceeding, in consultation with allies, on development of specific programs to accomplish TNF modernization goals.

LAND-TARGETED FORCES AND SYSTEMS

U.S.S.R. THEATER NUCLEAR FORCES: LAND FORCES

The Soviets have a significant number of nuclear missiles with which they could launch an attack on the Eurasian continent. Their peripheral missile attack force consists on MRBM (1,050 nm range launchers) and IRBM launchers (2,200 nm range launchers) located mainly in the western U.S.S.R. In addition, some of their ICMBs and SLBMs can be fired at short range and can be retargeted.

The Soviet Union has deployed a large number of nuclear-capable tactical missiles and rockets—primarily the ***SCUD*** short-range (85-160 nm) tactical ballistic missile, the ***FROG,*** a surface-to-surface unguided rocket and the ***SCALEBOARD,*** a longer range surface-to-surface missile. Initial deployment of the SS-20 has begun.

The Soviets have also continued active training in nuclear delivery techniques with the tactical aircraft assigned to Frontal Aviation. The most frequently used aircraft on nuclear delivery training missions are MIG-21 ***FISHBED*** J/K/L/N; SU-7 and SU-17 ***FITTERs;*** MIG-23 and MIG-27 ***FLOGGERs;*** and various medium-range bombers. The SU-19 ***FENCER*** is also an excellent aircraft for this type of mission.

PRC THEATER NUCLEAR FORCES: LAND FORCES

There is no direct evidence to confirm the size of the PRC's nuclear weapon stockpile.

The PRC has about 70 MRBM/IRBMs deployed in a strategic role. Deployment patterns and minimum range capabilities of these systems indicate that China has the capability to employ some of these missiles in a theater support role.

The primary aircraft available in the PRC inventory for nuclear attack is the TU-16 ***BADGER*** Additionally, TU-4 ***BULLS*** and a few IL-28 ***BEAGLES*** could be used to conduct nuclear strikes. If configured for nuclear attack, the ***BADGERS*** could strike targets along China's periphery to a distance of 3,000 km. About 50 Soviet urban-industrial areas east of the Urals are within its range. The ***BEAGLE*** could also be used for nuclear attacks against the Soviet Union. However, the ***BEAGLE*** radius-of-action would limit any such strikes to the immediate border area.

UNITED STATES THEATER NUCLEAR FORCES: LAND FORCES

The current inventory of U.S. tactical nuclear weapons is becoming obsolete and requires modernization. Many weapons now available reflect technology of the 1950s and 1960s. The U.S. inventory does not contain any ballistic missiles in the MRBM/IRBM class. Current U.S. theater nuclear forces consist of nuclear-capable cannon artillery, tactical surface-to-surface missiles, nuclear-armed strike aircraft, nuclear air defense missiles, atomic demolition munitions and ASW nuclear systems. Additionally, a substantial number of ***POSEIDON*** SLBM warheads are committed to support the Supreme Allied Commander, Europe (SACEUR).

The 8-inch and 155 mm nuclear artillery projectiles constitute the nuclear cannon artillery stockpile. A new 8-inch nuclear projectile is now in engineering development. The new projectile will provide a substantial increase in range, reduce response time, and improve effectiveness against the Warsaw Pact tank threat. Funds are also being requested to continue development of an improved 155 mm projectile. The 155 mm projectile is critical for support of NATO allies who are in the process of standardizing the 155 mm howitzer as their predominant artillery weapon and will ensure appropriate density of nuclear firepower across NATO's front.

By converting some dual-capable ***NIKE HERCULES*** sites to conventional-only batteries, resources can be conserved while maintaining an effective high altitude nuclear air defense deterrent. A detailed coverage analysis is being conducted by SHAPE to determine which sites should be converted to conventional warheads only and which should retain dual capability. Actual conversion could be completed by early 1979. There will be no reduction of ***NIKE HERCULES*** batteries as a result of this program.

PERSHING and ***LANCE*** are the principal U.S. tactical surface-to-surface missiles. ***SERGEANT*** and ***HONEST JOHNs*** have been replaced by ***LANCE*** in the U.S. units but some ***HONEST JOHNs*** will be retained in support of allies.

Engineering development is proceeding on a modular improvement to the current ***PERSHING IA.*** The ***PERSHING II*** will feature improved accuracy through the use of radar area correlation guidance. This accuracy improvement will permit a marked reduction of warhead yields.

The inclusion of RB/ER warheads in ground force theater nuclear weapon systems ***(LANCE)*** is a significant technological advance which will assist in meeting theater nuclear force modernization requirements. An RB/ER weapon provides more than 30 percent of its initial energy in nuclear radiation, giving increased battlefield effectiveness while reducing the nominal collateral damage radius by almost one-third. RB/ER weapons can contribute to deterrent capability and flexible response strategy by: making a nuclear response more credible if use of nuclear weapons on friendly territory is required; limiting effects, thereby improving escalation control; allowing effective engagement of targets which could not otherwise be targeted due to collateral damage and troop safety constraints; and increasing the area over which enemy units can be targeted.

A ground-launched version of the ***TOMAHAWK*** cruise missile will be considered for deployment in the European theater. This weapon's range and mobility would enhance the survivability of NATO's land-based, long-range theater nuclear forces. In addition, its projected high penetration probability, relatively low cost and high accuracy may offer improved cost effectiveness in comparison with current long-range systems.

Improved versions of the modern B61 gravity bomb, providing enhanced safety and security features, continue to be deployed to theater forces. Completion of the current tactical nuclear bomb modernization program should permit the retirement of tactical versions of the older bombs.

NAVAL FORCES AND SYSTEMS

USSR THEATER NUCLEAR FORCES: NAVAL FORCES

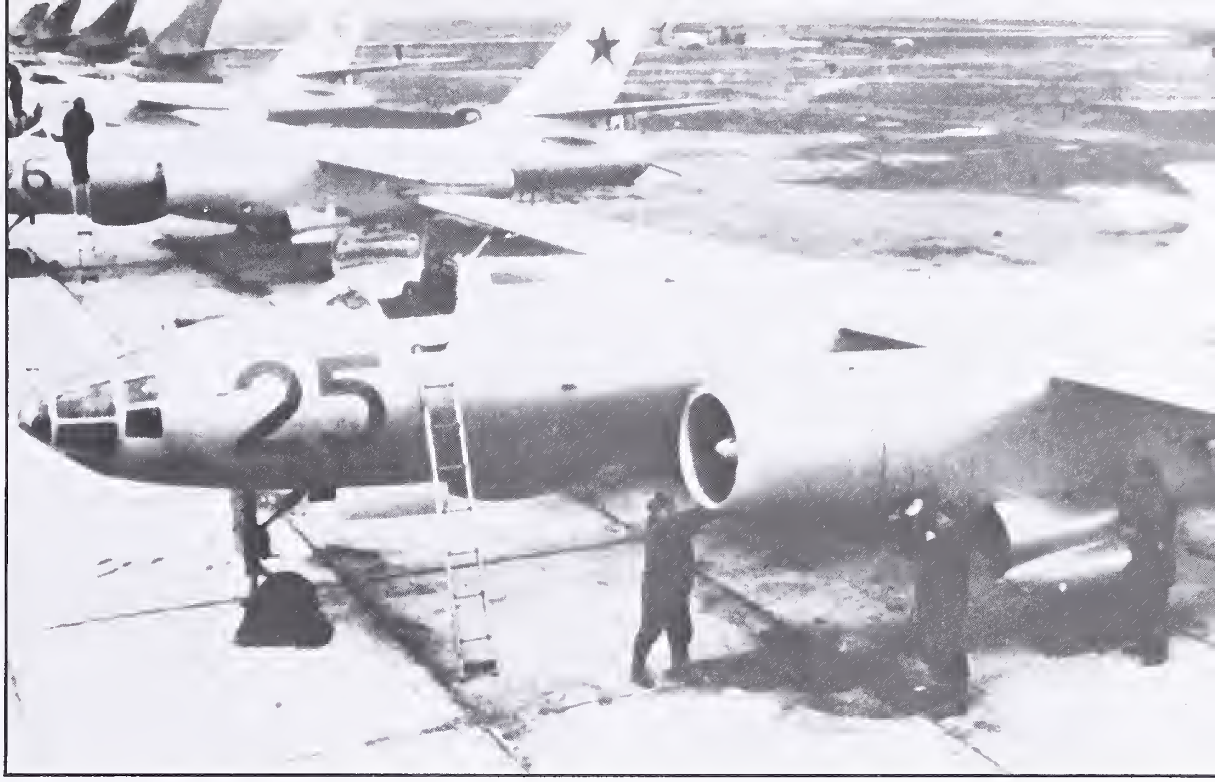
There are uncertainties about the Soviet naval nuclear weapons inventory, but the existence of these weapons is established. The Soviets have a balanced force of antiship, antiair, and antisubmarine nuclear weapons.

UNITED STATES THEATER NUCLEAR FORCES: NAVAL FORCES

The United States is developing the ***HARPOON*** antiship missile, and is conducting a feasibility study of nuclear warhead for this system. The earliest tentative deployment fo a nuclear version of this weapon is the early 1980s. ***TERRIER*** and ***TALOS*** missiles now provide fleet nuclear air defense. ***TALOS*** is scheduled for retirement.

The sea-launched version of the ***TOMAHAWK*** cruise missile is in engineering development. Deployed aboard nuclear attack submarines, the ***TOMAHAWK*** will be a

In addition to the TU-16 Badger, the Peoples Republic of China could use this Beagle aircraft to conduct nuclear strikes.



highly survivable weapon for antiship attack, and, as appropriate, for use against land targets with a nuclear warhead. In addition to deployment on nuclear attack submarines, ***TOMAHAWK*** will be deployed on about 50 surface ships.

Nuclear ASW weapons have significantly greater effectiveness than conventional alternatives. The U.S. nuclear ASW weapons have significantly greater effectiveness than conventional alternatives. The U.S. nuclear ASW arsenal consists of air-delivered weapons (depth bombs), surface-delivered weapons (ASROC) and submarine-delivered weapons (SUBROC). Nuclear ASW weapons provide a hedge against the possible inadequacy of conventional ASW. In view of their military utility they will be retained in the stockpile until a significantly improved conventional ASW capability is available.

Chemical And Biological Warfare And Nuclear, Biological And Chemical Defense

U.S.S.R. CHEMICAL AND BIOLOGICAL WARFARE

The Soviet Warsaw Pact forces continue to maintain a superior capability to survive and operate in a toxic environment, and to employ chemical weapons (Chart 7).

While the Soviet leaders are politically pursuing a total ban on the development, production, and stockpiling of chemical weapons, their military efforts in the chemical warfare (CW) area continue. Chemical, biological and radiological (CBR) training areas are becoming more sophisticated, improved training methods are being developed, and equipment is being improved and fielded.

There is no evidence to suggest slowdown in Soviet efforts to improve their capability to operate in toxic environments. Warsaw Pact doctrine clearly envisions the employment of chemical weapons in conjunction with either nuclear or conventional weapons. Chemical weapons are viewed as playing an important role in neutralizing enemy nuclear delivery means. There is also some evidence suggesting the Soviets would employ chemical weapons in a conventional war. A variety of delivery systems and chemical agents for use against tactical targets in the battle area is available to front commanders.

A large, well-equipped and well-trained CBR organization is organic to the Warsaw Pact force structure. In addition to the CBR troops, all other combat and combat support forces receive CBR training. There are many CBR training sites in the Warsaw Pact area, the majority of which are Soviet controlled. Warsaw Pact forces are unsurpassed in their capability to protect themselves and to conduct offensive and defensive tactical operations when such weapons are used. Decontamination equipment and individual personnel protection equipment are available to all fighting forces and support personnel. Chemical specialists are assigned down to company level and chemical units exist in all formations down to regiment. Combat and combat support units are well trained in protective and decontamination techniques. In addition, medical support units receive training and have a special platoon for the care of mass casualties expected from nuclear, chemical or biological warfare.

Increasing numbers of combat and combat support vehicles with integrated CBR collective protection systems are appearing throughout the Warsaw Pact area.

U.S./U.S.S.R. CW CAPABILITY COMPARISON

	U.S.	U.S.S.R
Summary	Currently marginally prepared to survive chemical attacks; not prepared to conduct sustained chemical operations.	Better prepared to engage in chemical warfare than any other nation; formidable offensive and protective capabilities.
Research, Development, Test, and Evaluation	Limited. New agent development very limited. Currently developing binary nerve agent munitions and improved incapacitating agents. No open air testing since 1969. About 2/3 of effort devoted to protective programs.	Known to be extensive and wide-ranging. Published research includes numerous areas with CW potential. Evidence of recently increased testing activity.
Doctrine	Committed to "no first use." Use in retaliation requires Presidential release and delegation of employment authority to unified commands.	Committed to "no first use." Requires initial release authority to politburo level, then delegation to "Front" commands as required.
Organization	Extremely limited; no dedicated chemical defense units in the active force. Army (only) has some reserve decontamination units.	Dedicated chemical defense units at all levels from "Front" down to tactical regiments. Chemical teams at company level.
Command and Control	Responsibilities fragmented on a functional and service basis.	Vertically structured; high-level centralized control. Chemical Director (Colonel-General) report to Minister of Defense.
Training	Limited. Emphasis varies widely. Usually rudimentary. Little emphasis on training exercises. No large-scale CW training areas.	Extensive at all levels, in all Services. CW, normally defensive, included in field exercises. Evidence of training with live agents. Extensive training areas.
Munitions Stockpile and Production	Inadequate usable munitions to support requirements. Stockpile aging, munitions becoming obsolete. Inventory primarily artillery, limited air-deliverable munitions, land mines. Limited forward deployment. Limited production facilities in layaway.	Total stockpile unknown. Doctrine requires large stockpile. Production capability exists. Munitions include aircraft, artillery, multiple rocket launchers, free rockets over ground (FROG) tactical ballistic missiles and possible cruise missiles.
Protective	Overall marginally inadequate. Significant capability gaps in decontamination and collective protection. Individual protective equipment issue insufficient.	All ground, and most air and naval personnel supplied wtih individual protective equipment.
Allies	NATO nations have marginal protective capability. Great variation among individual countries from adequate to essentially none. Limited standardization or direct cooperative efforts. With the exception of France, rely on U.S. munitions capability.	Warsaw Pact doctrine, organization equipment, and training similar to U.S.S.R. Cooperative development and production efforts for protective equipment. Rely on Soviet supplied munitions.

CHART NO 7

UNITED STATES CHEMICAL AND BIOLOGICAL WARFARE

In accordance with the Biological Warfare Convention, all U.S. military stocks of biological warfare agents and munitions have been destroyed. The only continuing military programs related to biological agents pertain to defensive protective equipment and research on the prevention of disease.

The Geneva Protocol of 1925 prohibits the use of chemical and biological agents in war. The United States, like most major powers, has retained the right to retaliate should chemical weapons be used against it. Specifically, U.S. policy is to retain a chemical warfare capability designed to deter the use of these weapons against the U.S. or its allies, and, should deterrence fail, to permit a reasonable degree of retaliation with chemical weapons. In June 1977, the President directed that U.S. negotiations take a comprehensive CW arms limitation approach with the Soviets during bilateral talks and that the U.S. CW stockpile be maintained without improvement. Therefore, efforts to improve the CW retaliatory capability have been halted. There is no request for production of chemical filled munitions in the FY 1979 budget.

Bilateral talks with the U.S.S.R. are now underway; however, little progress on substantive issues has been achieved to date. A treaty must include adequate provisions for verification of compliance, which presents difficult problems. The Joint Chiefs of Staff actively support and are participating in these negotiations to eliminate chemical weapons.

Should United States forces be attacked on a significant scale with chemicals during a conventional engagement, while lacking the ability to retaliate, it could be forced to initiate a nuclear response to defend successfully. If the Soviets achieve tactical nuclear parity, this option would be less viable.

Progress is being made in improving the U.S. defensive chemical warfare posture, but much remains to be done.

The first priority objective is for protective capabilities which will ensure the survivability of the conventional and theater tactical nuclear capability. Current protective capability must be rated as marginal due primarily to shortages of protective clothing, lack of CW protective shelters, lack of decontamination equipment, and the lack of an adequate area warning system.

Procurement of CW defensive equipment for war reserve and peacetime training has increased in FY 1978 and will continue.

Principal U.S. programs for development of protective equipment include: improved prophylaxis and therapy to protect against chemical agents; point-source detection and warning alarms; area scanning alarms; decontamination methods and equipment; protective clothing, masks, gloves, and boots required for individual physical protection; collective protection for vehicles and buildings; liquid agent detector kits, and training agents and devices. These programs are designed to provide equipment for all U.S. forces with maximum standardization. Comparable allied programs parallel these efforts. NATO's force goals already give high priority to CW defenses.

The second objective in the CW program is to enhance the credibility of the retaliatory stockpile by reducing vulnerability, increasing availability of a greater variety of munitions, and improving peacetime security. The basic purpose of a retaliatory chemical capability is to deter the use of CW against the U.S. or its allies. An improved protective posture and more adequate training also contribute to deterrence. The present U.S. CW stockpile is aging and contains a number of obsolescent weapon systems.

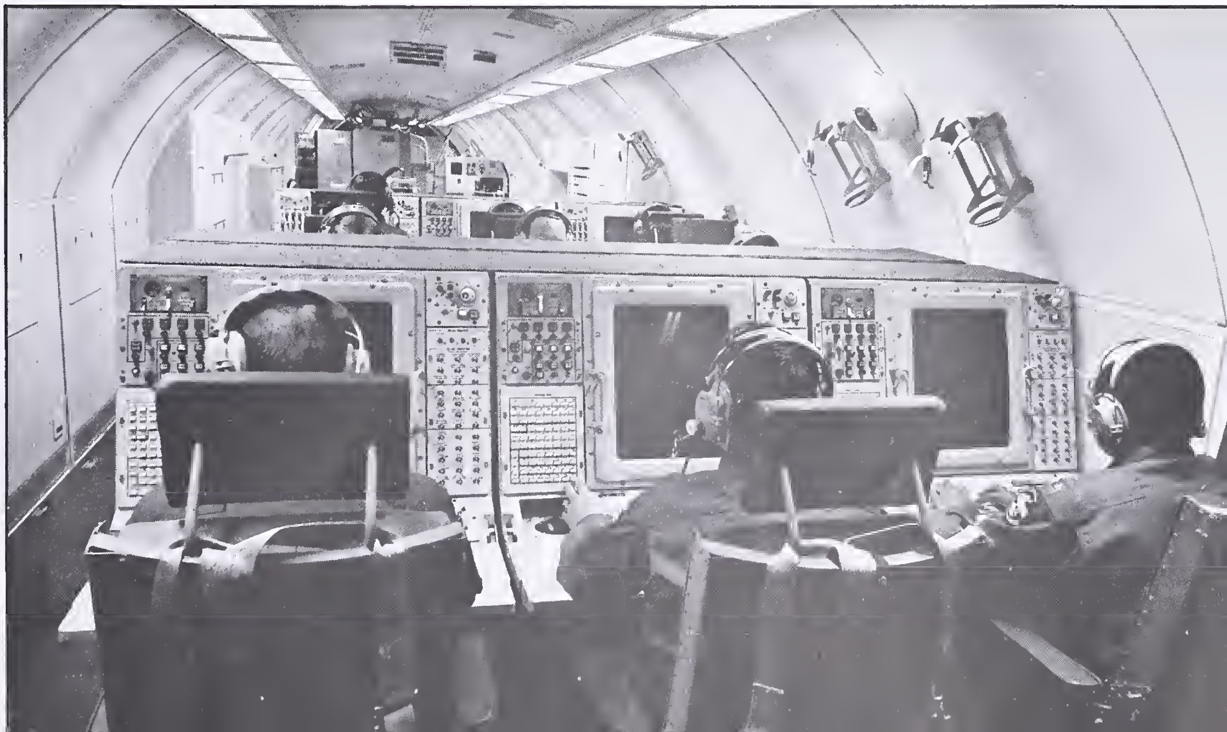
The aims of modernization are to provide a sufficient stockpile, allow for rapid deployment of munitions from storage to theater locations, and provide greater employment flexibility through variations in delivery configurations. Modernization of the chemical warfare deterrent and retaliatory stockpile can be accomplished either by upgrading the present stockpile, or by converting the stockpile to binary munitions (munitions which contain two relatively safe, separate chemical components which combine to form a lethal agent while the munition is enroute to the target). Binary munitions offer a feasible, economic, safe alternative which would limit potential hazards to areas surrounding storage sites, and would provide greater deployment flexibility by eliminating degradation of agent purity. In addition, there would be an elimination of costly disposal programs and reduced cost in government production plant facilities.

ELECTRONIC WARFARE

USSR/WARSAW PACT ELECTRONIC WARFARE

The Soviets have a national doctrine, "radio-electronic combat," which requires integrated electronic warfare, physical attacks on enemy command, control and communications (C^3), and the protection of their own C^3. In addition, their national concealment and deception doctrine stresses confusing enemy strategic and tactical information gathering systems. The Soviet Union/Warsaw Pact presents a massive communications, electronic surveillance, and weapon system array across the NATO Northern and Central Regions. Concurrently,

This view of the E-3A interior shows communications and control systems used in air defense and tactical air operations.



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Soviet/Warsaw Pact electronic warfare (EW) units are fully integrated into the air and ground armies and naval forces. The overall picture which emerges from examination of the magnitude of the EW challenge is even more disquieting than a detailed listing of the threat. In order to degrade or negate this capability, the U.S. must accelerate current efforts in the areas of joint employment concepts and doctrine, training, and equipment acquisition.

UNITED STATES ELECTRONIC WARFARE

The U.S. concept of EW is being reoriented from self-protection and surveillance to use of EW as a weapon system, integrated with lethal weapons. Several actions are underway in this area. An Air-Land Forces Directorate composed of U.S. Air Force Tactical Air Command and U.S. Army Training and Doctrine Command EW experts has been established. The group has thoroughly reviewed U.S. doctrine and the Soviet/Warsaw Pact threat to develop a Joint EW Procedures Manual. These procedures are undergoing test in JCS-sponsored exercises, and are being revised with use. In addition, the Joint EW Coordinating Group was established under a Joint Chiefs of Staff charter to provide a forum for progress on EW, with particular emphasis on joint employment.

Current lack of EW training realism stems not from a failure to appreciate its importance, but from the difficulty and costs involved. Nevertheless, the increase in emphasis on EW in exercises has been dramatic. This emphasis will continue in all JCS-sponsored exercises. EW training for overseas forces will be improved when the EW range in the United Kingdom becomes fully operational later this year, and when plans for the air-crew tactics training facility in central Europe are completed.

The continuing Red Flag exercises conducted by the U.S. Air Force expose aircrews to the Soviet EW threat, and provide practice in tactics and equipment operations necessary to ensure mission success. The EW Close Air Support joint test scheduled for this year will be another step forward in providing a realistic environment to examine and test U.S. concepts and technologies for countering the Soviet/Warsaw weapons systems.

U.S. forces lack sufficient EW equipment. Although the technology to counter Soviet Union/Warsaw Pact capabilities is available, increased programming and budgetary support will be necessary to translate this technology into fielded capability in a reasonable time frame.

WHO'S NEWS IN DEFENSE

REASSIGNMENTS

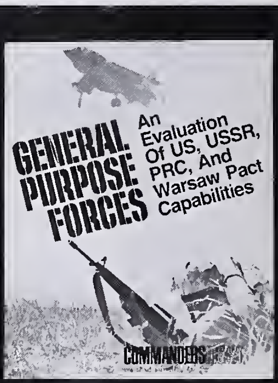
Lt. Gen. Robert H. Barrow, USMC, commanding general of Fleet Marine Force, Atlantic, is being reassigned to be assistant commandant of the Marine Corps. He also has been nominated for promotion to general.

Maj. Gen. Thomas P. Stafford, USAF, commander of the Air Force Flight Test Center at Edwards AFB, Calif., will become Deputy Chief of Staff for Research and Development, Hq. USAF. The former astronaut also has been nominated for promotion to lieutenant general.

HONORS

TSgt. Herman J. Kokojan, USAF, *Airman* staff, was named 1977 Military Photographer of the Year in the 15th Annual Military Picture of the Year Competition at the University of Missouri during its journalism week. He also won in 1975 and 1976—an unprecedented three successive victories.

General Barrow


GENERAL PURPOSE FORCES
An Evaluation Of US, USSR, PRC, And Warsaw Pact Capabilities
COMMANDERS

COVER: A Marine security guard watches as an AV-8A Harrier launches for a mission.

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